

Common Name:       **Inarticulate brachiopod**



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Scientific Name: *Lingula reevii* (Davidson, 1880)

Taxonomy: Phylum Brachiopoda, Class Inarticulata, Order Lingulida, Family Lingulidae

Area of Concern:       There are twelve species currently found throughout the world, seven being endemic, occurring in Japan, Northern Australia, the Philippines (Worcester, 1969) and the Hawaiian Islands.

*Lingula reevii* is the only species found in the U.S., occurring only in Kaneohe Bay, Hawaii. It has also been reported from Indonesia, but the status of this record needs further investigation.

Year First Listed as a “Species of Concern”: 2004

Species Description:

Brachiopods (lamp shells) are common marine fossils that contain about 352 extant species. *Lingula* represents one of the oldest extant genera on Earth. It was once widely distributed, but today exists only in a small area of the Pacific. Members of this genus are found mostly in shallow marine or brackish waters from the intertidal zone to about 20 meters (66 ft.). The phylum is included as one of three lophophorate phyla because of its feeding structure, a lophophore; however it also resembles a bivalve mollusc in possessing a mantle and a calcareous shell with two valves. *Lingula* is an inarticulate brachiopod (its shell is held together only by muscles and not teeth) that lives within a burrow and feeds on plankton. The lophophore consists of a fold of the body wall that possess a crown of ciliated tentacles surrounding the mouth. The lateral cilia create a water current and fine plankton are transported down the tentacles to the brachial groove and into the mouth.

*Lingula* is dioecious, and gametes are shed into the water column for external fertilization. Embryos develop into a free swimming larvae that look like a tiny adult; they develop a shell while planktonic. As additional shell material is laid down, the animal becomes heavy, sinks to the bottom and takes up its adult existence. There is no metamorphosis in *Lingula*.

Rationale for “Species of Concern” Listing:

Demographic and Diversity Concerns:

The species is rare and is only known to occur in one location in Hawaii (Kaneohe Bay) on an isolated sandbar. No quantitative surveys have been conducted, and little information is available on the status.

Factors for decline:

The main threats are: 1) habitat degradation and alteration; 2) overexploitation; 3) pollution and sedimentation; 4) a vulnerable life history; and 5) a limited distribution.

Because of its intertidal and shallow subtidal habitat, *Lingula* has been severely affected by increases in human population on several islands. *Lingula reevii* is threatened by overcollection (during the 1970s-1980s collected by researchers to supply Carolina Biological Supply) and habitat degradation. Because the animals are sessile and reproduction involves broadcast spawning, individuals must maintain a certain density to ensure successful fertilization of gametes.

Status Reviews/Research Completed or Underway:

References

- Cals, P. & C.C. Emig. 1979. Lingules d'Amboine, *Lingula reevii* Davidson et *Lingula rostrum* (Shaw), donnees ecologiques et taxonomiques concernant les problemes de speciation et de repartition. Cah. Indo-Pac. 1(2):153-64.
- Emig, C.C. 1987. Chapter V. Phylum Brachiopoda: p. 167-169. In D.M. Devany & L.G. Eldredge. Reef and shore fauna of Hawaii. Section 2: Platyhelminthes through Phoronida and Section 3: Sipuncula through Annelida. Bishop Museum Special Publication 64 (2 and 3). Honolulu, HI. 461.
- Worcester, W.S. 1969. Some aspects of the ecology of *Lingula* (Brachiopoda) in Kaneohe Bay, Hawaii. M.S. Thesis, UH. 49p.

*For further information on this Species of Concern, or on the Species of Concern Program in general, please contact Ms. Marta Nammack, NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301) 713-1401, Marta.Nammack@noaa.gov; or Dr. Jason Baker, NMFS, Pacific Islands Fishery Science Center, 2570 Dole Street, Honolulu, HI 96822-2396, (808) 983-5303, Jason.Baker@noaa.gov.*